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RESEARCH IN THE COLLEGE

WHAT does our present civilization have to offer which is superior to former ones? Surely we would agree that the answer was not to be found in the improved physical existence we lead, great as that may be. Rather would it appear in our attitude and approach to whatever we may call the truth. This, I believe, has come about by the modern spirit of research or the spirit of science which seeks to know the facts concerning our universe without bias or preconceived notions concerning it. No ancient civilization possessed any such power, but opinion, often dogmatic, ruled.

In the light of the recent discussion concerning evolution it must also be evident that this great boon of modern civilization has not touched any large number. How can it be made more effective? The majority of our leaders are college men and women, and inasmuch as college ends the formal education of most of our leaders, surely the methods of research should be brought with understanding to college students. They must be exposed more thoroughly to the ideals and aims of the spirit of research.

WHAT RESEARCH IN THE COLLEGE?

Two phases of research in the college should be emphasized, research on the part of the teacher and on the part of the student. Mention the idea of research in the college and how frequently the response comes back that research is not a part of the college curriculum and that teaching is paramount. This current opposition to research in the college has grown out of the vague conception of what research is and the belief that college teachers are spending a lot of time and college money "fiddling" with useless problems. It was once reported that in an institution in this country an attempt was made to solve by experiment the problem, Does a watched pot take longer to boil than an unwatched one? Various kinds were watched, both directly and out of the corners of the observers' eyes, but not the slightest difference in time could be detected between these two modes of observation or the time it took the unwatched pot to come to a state of ebullition. It is upon such reports that the public too often bases its conception of research work. This is not the type of which I am speaking. My plea is that not only should a teacher be keeping himself alive in his subject by doing some phase of creative work, but most of all that research work is a method of education which must be introduced to undergraduates from the day they enter as freshmen until they walk out with their diplomas. After twenty years of experience I am convinced that it is the most effective method of education yet devised and that undergraduates may be introduced successfully to this plan. If in discussing this problem personal experience intrudes, it does so in the hope that greater intelligence may be shown in discussing one's own experience than another's.

The various departments of a college have their ups and downs, and the success attained by any department seems to me to rest upon a certain elusive spirit which pervades it. The thesis which I hope to defend in this paper is that more specifically a department, and in general a college, is successful to the degree in which the spirit

of research has seized upon it. This spirit is not mechanically produced, neither can we tell how it is evolved nor how it is maintained, but of its reality there can be no doubt. There are certain material conditions under which the spirit of research may more easily be fostered and are, therefore, an important adjunct. The real essence of research, however, can not be conveyed any more than the artist can tell the beginner how to acquire that subtle spirit which pervades the master's work. He can tell him what colors and canvas to use, but we all know that the picture by the master has something far greater than paints, brushes and canvas, helpful as these may be in creating a great picture. Fortunately, however, as the young artist works under the enthusiasm and inspiration of the master there comes into his own soul the power of creation, and while it may not be that of the master, it is his own and may even outshine the teacher's. It should be the hope of college teachers everywhere that men and women in the classroom and laboratory would sense their creative powers in those fields which appeal to them and go out from academic halls to exercise those powers in their carefully selected professions, for it is from such students that our future leaders will come. Only the spirit of research can develop men and women of this type. Can this spirit of research be defined? As a working definition, the spirit of research is the desire to seek for new truth. A stamp collector is not necessarily a research man, splendid as that activity may be, but a philatelist may collect stamps for the purpose of research and thereby discover that Russia is attempting to recoup her finances by a monopoly on stamps. Whether a farmer discovers a new fertilizer for his soil that will make two blades of grass grow where only one grew before, or the physicist by crucial experiments is able to isolate and measure the elementary electrical charge, their quest for new truth, their spirit of research has made them leaders in their profession, and it is such men and women which any college should seek to develop. If on the campus during those four formative years of young people's lives we can stimulate them to dream dreams and see visions of those creative powers which lie within their grasp, the criticisms which are levelled at the college will avail little. The spirit of research is our only way out. This is not an attempt to be rhetorical, but with both feet on the ground trying to say that in our college curricula emphasis must be laid on every effort that will develop thinking men and women, and the most practical way to do this is to give them opportunity to think and dream and give free rein to their powers of imagination.

The research method is preeminently a self-educative process and must perforce develop the latent powers of thinking. In passing, attention might be called to the fact that too often the curriculum is so made up that it inhibits thought processes. I knew a student a few years ago who was taking eight two-hour courses a semester. How much consecutive and constructive thinking can a student do with such a schedule? From the standpoint of research those institutions providing three five-hour courses as a schedule for their students are moving in the right direction, as it seems to me, to offer an opportunity for the better kind of work.

Means of attaining the Spirit of Research

(1) Research on the Part of the Teacher

It is obvious from what has preceded that teachers imbued with the spirit of research are an essential factor in its development in a college. The teacher's schedule must not be so filled with teaching that no time

can be found in which to undertake research work. Not only must a teacher be dispensing knowledge, but he must also be creating it. He must be encouraged to do research work and also given time and equipment to develop research students. Of course it is understood that the teacher's investigation must not be to the detriment of his teaching. There must be a sane balance between research and teaching, for each contributes to the other. That opportunity for research is not a condition prevalent among colleges is emphasized by the fact that only a year ago the National Research Council called a meeting of representatives of a number of small colleges to consider the problem of research on the part of the faculty. It seemed to those calling this meeting that inasmuch as nearly 50 per cent. of our research students came from independent colleges, it was highly desirable that college teachers themselves should be enthusiastically undertaking research work and thus stimulate more students to do likewise.

(2) Research on the Part of the Student

The second phase of research in the college to be emphasized is the development of the research spirit in the undergraduate. This, to my mind, is not only the more important but the unique part of research in the college. How is this to be accomplished? (a) Definite research courses should be offered so that students know they are in the curriculum and with certain preparation may elect them. (b) For the high-grade students, in courses not primarily research courses, there should be opportunity to participate in creative work in the subjects in which they are interested, if they manifest a desire to do so. Whether in formally scheduled courses of research or in special extra-curricular arrangements, the work must be absolutely by free choice. I can not conceive of a research course being required in a college as now organized.

How undergraduates may be led into this kind of work may be shown by relating some personal experiences. A student came into my office one day and said, "I think I have a new method for deriving gasoline from natural gas." He explained his proposed experiment, and if his chemistry wasn't valid, his physics was; so he was told to go ahead and try it. The world did not profit by a new supply of gasoline, but there did evolve a very good physicist whose contributions to our knowledge of physics and development of students has already made the early experiments with natural gas very much worth while. Another student became interested in the strains developed in cast-iron rods when magnetized. In making a study of this phenomenon he solved a very interesting little problem, the data and conclusions of which were published in one of our leading periodicals of physics. To-day that same student is an expert in marine law. Still another student helped to develop a new method for measuring the constants of the earth's magnetic field. His college course ended his formal education, and he went into business. A fourth student made a special study of a problem in magnetism, and after further study in a graduate school was employed by one of our large electrical concerns and developed for them the small peanut tubes so widely used in radio work.

These various men have been mentioned because their life work covers a wide range of human activity. Their experience, however, so far as physics is concerned, was the same. For all of them a definite problem was presented. They were brought face to face with the need to think through for themselves the methods to be employed in attacking their problems, and, having secured data and results, to form their conclusions on the basis of their findings. Those who went through this process created, each for himself, a new bit of knowl-

edge, and there began to smolder in each of them a faint spark of that enthusiasm which comes to every one who pioneers. Furthermore, these men along with scores of others have come back to volunteer the testimony that the training they received in that sort of work has been of inestimable value in their life work. The lawyer found that every case which came to him could be effectively treated as a research problem and the method of handling it was exactly the same as that acquired in his early training in physics. The business man became manager of a manufacturing concern where there was a research department, and he found he was not at sea in that phase of the work nor in the many other problems which arise in a manufactory. Those who finally took up physics either as professional teachers or as research men in commercial institutions naturally found such training valuable. These men were all undergraduates, either juniors or seniors, out of a group of about thirty-five with whom it has been my great privilege to work in the last eighteen years, for during that time there has always been a definite research course for undergraduates offered in my department. To apply the same method to freshmen and sophomores seems to me to offer no greater difficulty than that the teaching force would have to be increased, as this kind of work involves a great deal of individual attention. I have tried out this method on a very few promising sophomores and they have shown excellent progress.

The experience gained in giving the same type of training in research work to all students, whether they planned to do graduate work in physics, to go into business immediately after college, or to enter any profession, has led me to the very decided conviction that every teacher should treat all his students as though each one was to become a specialist in his own line. This is by no manner of means saying that all students who enter my classes are enthusiastic for physics or will make physicists. The little, old, irascible German photographer in my native village had a profound philosophy in the remark, "You can't make beaches out of bumpkins." The implication is, however, that, given a fair trial, the research method will arouse more dormant students than any other method.

If my theme with its variations seems applicable only to the physical sciences, I believe I could make a very good case for any other field. In talking to a creator of poetry recently I asked, "To what extent does experiment come into the writing of poetry and prose?" Instantly there flashed back the response, "He is a dead one who doesn't do it." We found very quickly that our lingo of "creative literature," "research work," "imagination" and "color" was after all a common language.

Again, if the particular terminology which has been used is exchanged for another, it may bring home to some that what has been discussed is not mere individual fancy. Those who are making the science of education their main work would call the research method "project work." They would emphasize it perhaps as a method of education, while I, though not stressing this phase of it any less, would emphasize the enthusiasm engendered in the student when once he grasps the idea that perhaps in a small way he, too, is adding to the sum total of human knowledge.

Coe, of the Glendora Foothills schools of California, says, "The project method has come into education, has been coming into it for more than a century, to stay there, and to grow until it dominates schools of all grades." From the standpoint of research the project method is as old as Galileo, nay, older, for the hunter's instinct is primal. The active participation of the student in creative work functions from the

kindergarten through all the grades and surely it must also in the colleges. Somehow I can't help associating the criticism hurled at the colleges to-day with their lack of the spirit of research. We college teachers are prone to sniff at new methods, and I have no hesitancy in saying that of all the groups of teachers from kindergarten to university we know the least about the formal arts and methods of teaching.

In thus presenting a plea for the wider use of the research method as a means of education, it is evident that there are set over against it other methods which are less desirable. The history of the development of the research or scientific method will bring out this difference. We generally speak of Galileo (1564–1642), as the father of modern scientific methods. Three hundred years ago the intellectuals were wont to discuss pro and con those questions which seemed important to them. The discussion group in one form or another was the method of education then, as was also the lecture system. There is no denying the subtlety of their logic or the apparent cogency of their arguments. In the scientific field they discussed the proposition as to whether a large stone or a small one would fall the fastest from the top of a high tower. At this point Galileo appears on the stage and asks, "Why don't you experiment and see?" and the modern age of science is ushered in, the age when research is to supplement if not displace the discussion group and the lecturer, when mere opinion gives way to factual assertion and fundamentalism is superseded by modernism. Galileo, as good as his word, climbed to the top of the leaning tower of Pisa and dropped simultaneously a large and a small stone and the expectant crowd below heard them strike simultaneously. There can be no argument against experimental fact. That single experiment of Galileo sent the crowd home with one less question for their discussion group.

The recrudescence of the controversy concerning evolution emphasizes only too clearly that scientists have hid their light under a bushel by not emphasizing the method which they have found so fruitful of results in their own fields of knowledge. If our great public leaders persuade multitudes to believe that opinion has more weight than scientific fact, then those who would advocate the discussion group as an educational method would do well to ponder the facts of history. Upon the ancient walls of the University of Upsala are inscribed the words which convey this thought:

> It is great to think freely,
> But greater to think right.

Which method will we use?

THE METHOD OF RESEARCH, THE GUIDE OF LIFE

The research principle does not apply merely to a department, but, I believe, it has a very important bearing as well upon certain outstanding problems in college life.

(1) The "Gifted Student" Problem

Several organizations have spent considerable time and money in making a survey of the colleges of the country regarding the efforts put forth to encourage the gifted student. Their point of view was that the college spent too much time on the poor and mediocre student to the neglect of the good one. In their reports they offered various expedients, such as honor courses, weeding out poor students and raising the general standards of scholarship. From what has been said concerning research on the part of the student it must be evident how it will fit into the schedule to take care of the gifted student. If in any course a brilliant student appears and is not being pushed by the regular course, it becomes a comparatively easy matter to start the student on some problem, project, if you will, that will

be of immense value and thus keep him more interested in the course than if kept in lockstep with the slower students. This seems to me the one outstanding method for encouraging the gifted student.

If we also call the gifted student that one who, given a chance, goes on beyond the college for further training, then a great many are lost to creative scholarship between the college and the graduate school. There are in this class the gifted student who has unwisely chosen as his college one which does not prepare for graduate work and the student who has unwisely chosen his courses in a good college and yet is not prepared for advanced work. What is to be done for this appallingly large group of students? In some way they must be conserved, for I have found that the majority of them are dead in earnest to obtain a good training. It is this class which one finds so often in the small denominational college because they lack funds to pay the larger tuition charged in the better colleges. One way in which these students may be conserved is by encouraging them to take a fifth year of college work but devote it largely to the research method in whatever field they desire. After four years of college work many of these students can not afford a fifth year. It is at this stage in their development that some of the funds which are used for encouraging research students could be used to a good advantage, as it is a strategic time in their careers.

(2) Problem of Vocational Guidance

Many of our best colleges and universities now have a well-organized bureau of vocational guidance. If a college has a well-rounded curriculum, the graduates as they go out should in their selections of a profession approximate to a fair cross-section of life. Now suppose that in every department of the ideal college opportunity was given for men to exercise a little of their creative powers in fields which appealed to them, they would come to the end of their college life with some idea of what they wanted to do for a life profession and it wouldn't take an intelligence test to discover their proclivities. It is not an uncommon complaint among the graduates of a college that their Alma Mater did not help in selecting a life work. No college has a monopoly on inability to bring students to a point where they could think all around a subject and in the light of their findings make a decision as to what their course of action should be. College life is unique in that during these four years the great impulses come that direct students toward their life work, if they come at all. If college men and women go on for a technical or professional training, they must decide what they intend to follow, and if college ends their formal training, they will select or drift into some sort of a career. It is highly important, therefore, that during college days our students should be furnished with the method which will enable them to meet their life problems intelligently and with success. A college ought to be the place where students would find themselves. I know of no greater help in this matter than a knowledge of the method of research, and it applies both to those who go on for advanced research and to those who enter their life work when college days end. After all, isn't the finding of one's niche in life just a splendid piece of research?

(3) Enrichment of Curriculum and Revivification of Departments

It has already been suggested that the graduates in their selection of careers should represent a fair cross-section of life. It ought to be possible to establish a definite norm as to the percentage of men who would enter any given profession. It will be assumed that we are dealing with an

ideal college, imbued with the spirit of research, and students are being introduced to its methods in all departments. If from such a college it was found that the norm for men going into architecture was not up to standard, the first inquiry would be, "What are the conditions in the art courses and those kindred to it?" If they are lacking, it would be the duty of those having it in charge to inaugurate new departments and introduce new courses. It was assumed that the ideal college was being considered. Suppose the number of engineers going out was low. If after inquiry it was found, however, that courses in physics seemed adequate, it might occur to the administration that possibly something was wrong with the teaching and that rejuvenation was the essential thing. In other words, these vocational curves would furnish the administration with one of the most effective checks on the curriculum and the kind of teaching which was being done.

Thus one might go on indefinitely on other educational problems and look at them in the light of the spirit of research and much that is helpful would be found. There is the problem of technical and professional education. Large sums of money have been spent in trying to find out why students do not go into engineering as a profession, as they once did. Perhaps it sounds dogmatic, but the research method is their solution also. This is a problem which is a subject by itself and can not be treated in the space allowed.

Conclusion

What is the conclusion of the whole matter? Do we wish to foster research in the college? We do, if thereby the college fulfils in a more efficient manner its function. The function of the college is that of education, whose purpose in turn is the complete development of inherited capacities or, to use the words of the militant Wiggam, it is "to draw out and utilize each man's individual capacities, emotions and powers." I believe the inculcation of the spirit of research in our undergraduates is the best means yet devised for doing this.

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SOCIAL WORK AND THE SCHOOLS[1]

Social work as we know it to-day is an outgrowth of the humanitarian movement of the early part of the nineteenth century. Philanthropy as an instinctive response to acute need and suffering is as old as civilization itself. It is still the dominating element and the motive power of modern social work. During the nineteenth century social forces were at work which ultimately changed the entire course of charitable effort, widening its horizons, changing its objectives and perfecting its technique.

It is frequently claimed that social work in America has developed within the past fifty years. While it is true that many of the important developments in this field have taken place within this period, significant pieces of work distinctly modern in character have antedated this period. A brief citation of some of the leading advances of the past three quarters of a century will serve to indicate concretely the nature of the change from the simple philanthropy of early days to the complex, highly organized social work of to-day. In this brief discussion, it is possible only to select, more or less arbitrarily, examples from certain fields of social work.

The New York Association for Improving the Condition of the Poor has had a history of over eighty years. A study of the projects and accomplishments of this organization throughout its history would

[1] An address delivered under the auspices of New York University, April 9, 1926.

furnish a cross-section to social theory and practice for over three quarters of a century. We shall, however, refer only to a few of the outstanding accomplishments of this organization and confine ourselves to those which have a more direct bearing upon the problems of the schools. The association was founded in 1843 by Mr. Robert M. Hartley and embarked upon a program which attempted both to deal more effectively and promptly with acute distress and to deal as well with all the environmental factors which affect the lives of the poor. It immediately instituted a system of relief whereby relief was given only after a visit by a voluntary visitor to the family's home. This was a distinct innovation in the philanthropy of that day. For over fifty years, from 1845 to 1898, the association was a leader in the campaign for improved housing conditions in this city.

As early as 1850, New York City suffered from an inadequate supply of schools. In those days, part-time and double session were unknown, and the school authorities apparently met the problem by the simple expedient of turning away all children for whom there was no room, especially if they happened to be poor. Since there were at that time no adequate laws compelling school attendance, the pressure for more adequate provision of schools was not great. The A. I. C. P. immediately addressed itself to this problem. In 1853 it secured the passage of the first state truancy law and for thirty years it supported the public authorities in the enforcement of the law and carried on a continuous campaign for more and better schools.

From its earliest days the association was actively engaged in public health work. It started the first agitation in this city for a better milk supply as early as 1856. It founded two of the leading dispensaries of the city and organized the Ruptured and Crippled Association, which later became the Ruptured and Crippled Hospital. In 1903 the A. I. C. P. established Sea Breeze Hospital, the first sanatorium in America for the treatment of bone tuberculosis in children. It was here that the first open-air school in America was established.

In continuing its work for more and better schools, the association in 1898 started the vacation schools in New York City as a social experiment and it carried this work on until the department of education took it over. In 1905 the A. I. C. P. appointed a committee on the physical welfare of school children, with Mr. C. C. Burlingame, formerly president of the board of education, as chairman. This committee made a careful study of the home environment and economic condition of one thousand four hundred school children known to be suffering from serious physical defects. The report of the committee and its recommendations were largely responsible for strengthening school nursing and school medical inspection work in New York city.

Nor has its work always been confined to the physical aspects of child welfare. Within recent years the association has supplied scholarship funds for promising children in needy families so that such children could continue their education without sacrificing the economic welfare of the family. Within the past year the association has added to its staff a trained vocational adviser who assists the visitors in planning educational and vocational training for children of working-paper age.

In 1854 the New York Children's Aid Society was founded. This society was tremendously interested in the large number of homeless waifs and neglected children in the streets of New York. Probably few of you realize that although at that time the city was only one quarter of its present size, there were some forty thousand children under fourteen years of age who were not attending public school. Many of these children were orphans; some were

suffering from neglect of home conditions and supervision. The society immediately undertook two important lines of work. It gathered up each year several thousand of these orphaned and neglected children and placed them in good foster family homes in the middle west as an alternative to their commitment to the county almshouse. It attempted to meet the school problem by establishing in various parts of the city industrial schools where children "too poor to attend the public schools" could be received, taught trades and instructed in the three R's.

There followed shortly after this an awakened interest in the more adequate provision for neglected and delinquent children. Various institutions were established for the better care of such children and gradually they were removed from the county almshouses where they had been thrown with criminals and paupers and placed in institutions where a certain amount of care and supervision was given. The deadening effect of institutional life gradually became apparent and there were established in various parts of the country institutions of the so-called cottage type. In these institutions children are placed in cottages with a house mother in charge. This type of institution became very popular because it more nearly approached the conditions to be found in a normal home.

Continued experience with the problem, however, has clearly shown that the plan inaugurated by the Children's Aid Society of placing children in foster homes under supervision is preferable even to the best type of institution. The State Charities Aid Association has been a very effective agency in placing children in homes for care and adoption. The State Charities Aid Association has recently published a very exhaustive study of some 910 children who were thus placed in foster homes and who have now attained maturity. The study clearly shows that the progress made by these children, whether from the point of view of economic or social adjustments or educational standards, compares very favorably with that made by children growing up in normal family groups.

With the growth of the charity organization movement in this country, beginning in the early eighties, a new method was introduced into social work. The New York Charity Organization Society, for example, which was founded in 1882, had as its original purpose the "coordination of charitable effort" in New York city and at first confined itself merely to a registry of the names of families assisted by various agencies and endeavored thus to reduce overlapping and waste effort. It soon recognized, however, that it had an obligation to provide a more definite service to needy families referred to it for care. This society and others organized along the same lines developed what is known as modern family case work. Briefly, the method of family case work is somewhat analogous to medical practice. The first step is to make a diagnosis of the family's condition after a careful investigation of the family's needs, through contact with the church, relatives or other individuals or agencies who may be helpful in planning for the family's welfare. On the basis of such an investigation and study, a plan for each family is made, the purpose of which is to restore the family to economic and social efficiency. The giving of material relief is only one part of the social treatment of such families. For example, as has already been indicated, the planning of vocational opportunities, the securing of suitable employment, periodical medical examinations and the securing of necessary medical care and treatment are all important services in good family case work. This point of view has been generally accepted and to a remarkable degree is being carried out by family welfare agencies throughout the country.

The National Child Labor Committee, organized nearly twenty-five years ago by a group of social workers, has attempted to deal with one of the important by-products of poverty and of the breakdown of our industrial system. This agency and the local child labor committees have done more than any group to secure the enactment and enforcement of compulsory school attendance laws and are largely responsible for the gradual increase of the age at which children may leave school for industry. As Dr. Dewey has pointed out in a recent address, teachers and school administrators have been extremely tardy in lending their support to this movement which has such a vital bearing on the social program of the schools.

In 1909, largely on the initiative of Mr. Homer Folks, a leader in social work, the White House conference on the welfare of children was organized. Professional and lay workers in the field of child welfare met to discuss adequate standards of child life. The conference decided that every effort should be made to prevent the breaking up of homes and the placing of children in institutions. The action taken at this conference had a very important bearing upon the movement for widows' pensions or for public aid for mothers, which have made possible the keeping together of many families which would otherwise be broken up. The conference also proposed the establishment within the Department of Labor of a Children's Bureau which would conduct studies in the field of welfare of children and aid in the enforcement of federal laws for the welfare of children.

While these random selections of advances in philanthropy and social work give a totally inadequate picture of the enitre movement, they will serve to indicate at least certain generalizations regarding the objectives of modern social work. It is apparent that throughout its long history of dealing with poverty and its by-products, charitable and social agencies have become more and more conscious of the need of preventive measures. This is more particularly true of the development of public health work, much of which grew entirely out of the work of charitable and social agencies. For example, the work of the national and local tuberculosis associations has headed off at the source a great deal of the poverty which would otherwise have followed had the enormous death-rate from tuberculosis of a quarter century ago been allowed to continue. The salvaging of the lives of children through intelligent and planned care has unquestionably prevented many of the economic and moral breakdowns which would otherwise have followed.

Another characteristic of the modern social work as distinguished from the earlier type of philanthropy is that the modern agency now regards itself as an experiment station where various proposals affecting the social well-being and the health of the community can be tried out, their value determined and their practicability tested. I need only to remind you that the social settlements experimented with kindergarten and later with Montessori schools before such work had been adequately tried out under public auspices. The movement for school feeding of children was tested out by voluntary agencies and both the value and limitations of the school-feeding program were appraised before the public authorities were asked to assume the responsibility for such work.

There has been gradually emerging an interest in social research which again has largely grown out of the discouraging battle with poverty and its by-products. One of the earliest pieces of research work of this type in America was the study of Dr. Devine, entitled "Misery and its Causes." Dr. Devine, then director of the New York Charity Organization Society, brought to

this task the training of a political economist. He studied the records of one thousand families in order to discover the causes of their dependency. The Pittsburgh Survey was another outstanding example of research conceived and carried out by social workers. The influence which it had upon the form which social work has taken in recent years has been tremendous.

As most of you are aware, a similar evolution has been taking place within the field of education itself. Education was at one time considered the exclusive privilege of the well-to-do. With the growth of the democratic ideal has come a universal demand for the education of the youth of the land. There are, as we know, conflicting motives and objectives in our conceptions of the function of the public schools. They are designed first to prepare children for industry and secondly to prepare the child for his place in a democratic community. The schools have never been able to accomplish either of these ideals as well as we could wish, largely because of the survival of the older point of view regarding education, which tended to remove education as far as possible from the everyday life of its subjects.

During the past twenty-five years, particularly under the inspiration of Professor John Dewey, the schools are gradually awakening to a realization of their social function. In general, we may say that the newer point of view of education assumes that the purpose of education is to enable the child to share in the best experience of the race and in the life about him. It attempts to enable him to take his proper place in the life of the community.

It must be obvious, therefore, from what has been said regarding the changing point of view in the field of philanthropy and social work that two lines of endeavor, social work and education, have many objectives in common and that at many points their fields of action overlap. May I close with the quotation from a recent address by Professor Dewey at the National Conference of Social Work in Washington:

> We have got to recognize this social responsibility, and I would even say that the educators should arrogate to themselves the assumption that their responsibility is greater than that of others. I do not know just what a social worker is (although I have recently seen some definitions), but whatever he is, teachers should say "We are it"; they should say "We are more it than is any other class in the community," in the really fundamental work of improving the health and culture of the community, and in spreading liberty and justice and happiness throughout it. If that is the business of social workers, then the teachers ought to be challengers over all other elements in the community, professional and unprofessional, in claiming to be the leaders in social work.

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EDUCATIONAL EVENTS

THE MEXICAN EDUCATIONAL PROGRAM FOR 1927

IN view of the religious and educational disturbances in Mexico there is special interest in the educational program for next year as presented by Dr. Puig Casaurane, secretary of public education of Mexico. Dr. Casaurane recently sent a circular letter to the governors of the states asking their cooperation in the spread of public education throughout Mexico.

As quoted in the *Bulletin* of the Pan-American Union, this letter was in part as follows:

> As I am sure you will agree, the educational program for 1927 should be formulated some months before the end of the present year. . . .A study of the most recent and complete statistics shows that in 1925 a total expenditure of about 20,000,000 pesos by state and local governments was made for education. . . . The Federal Government in 1925 spent 23,252,992 pesos on education, aside from school construction and repairs, whereas in 1926 it will probably expend no less than 25,000,000 pesos. This includes expenditures for 143,000 pupils in federal primary schools outside of the federal district. It is thought that the number of such pupils will in 1926 reach nearly

200,000 because of the addition of 1,000 new rural schools which have been opened.

In 1921 census figures showed the percentage of illiterates to be 62.29, while 1926 statistics show that there are in the country 2,652,199 children of school age, of whom only 1,040,521 are attending school, or 35.57 per cent. of the school population. Therefore of each 10 Mexican children 6 are not attending school. The need of rural schools is very great, the total number now maintained by the states being 4,635 and by the Federal Government 2,690.

Each state is requested to establish and maintain in 1927 a number of rural schools commensurate with the factors of population, number of townships and illiterates, and in return the Federal Government will engage to establish and maintain as a minimum the same number of rural schools within that state's territory. . . . The cooperation of the State and Federal Governments is sought both in securing material educational benefits and in spreading the principles of education.

CATHOLIC EDUCATION IN AUSTRALIA

Facts about Catholic education in Australia, as presented by the Most Reverend James Duhig, D.D., Archbishop of Brisbane, Queensland, Australia, are given in the September issue of *Catholic School Interests*. Archbishop Duhig said:

No religious schools in Australia are subsidized. The position of Catholic education in Queensland is satisfactory inasmuch as the government school system is most liberal. Pupils from any primary school may enter for the scholarships to any secondary schools, and having obtained the scholarships, may choose the secondary schools they like. Catholics naturally choose the Catholic secondary schools.

The passing mark for entering the secondary schools is 50 per cent. But the weak scholars are weeded out the first year.

The secondary scholarships are tenable for three years, and if those who have them make satisfactory progress, their tenure is extended for a further term to facilitate qualification for university entrance examinations.

University scholarships are much fewer in number and depend on the place the student gets in what are called the senior examinations held under university auspices. There is no Catholic university in Australia. All are state universities, but every state has its Catholic university college, affiliated to the university itself—something akin to the Catholic College of Oxford in England.

These university colleges are not merely places of residence for Catholic students but also schools of Catholic thought and Catholic training, where an invigorating Catholic atmosphere prevails and where a university teaching in philosophy that might be harmful to Catholic students is corrected. Catholic philosophy and apologetics are formally taught in the university colleges, but have not yet been accredited to the curricula.

THE SCARCITY OF TRAINED TEACHERS

Secretary J. W. Crabtree, of the National Education Association, Washington, D. C., has issued a statement in which he calls attention to the lack of trained teachers in connection with the opening of the schools.

Few schools, he states, are actually closed for want of teachers, but there is a great shortage of trained teachers as measured by the association, which calls for two years of professional training beyond high-school graduation as a minimum and four years or more beyond high school as an ultimate goal.

Mr. Crabtree states that the necessary wartime practice of calling into the service very young and untrained teachers seems to continue long after the emergency has passed. Many well-trained teachers in a few of the states are without positions while scores of those with little preparation and experience are employed.

More searching inquiry into the fitness of teachers and principals, he thinks, should be made. In order to put a competent teacher in every classroom, some way must be devised to keep inferior persons from the teaching profession and to lessen the number that would use it as transient employment. To do this requires rigid laws of certification and requirements high enough so that only those of ability can qualify. In one state alone nearly three thousand teachers whose training only amounts to the sixth through the tenth grades teach a fourth of its children.

Mr. Crabtree believes that the spiritual rewards of teaching still outweigh its financial rewards, for teaching offers joy and satisfaction in social service, gives an opportunity for continuous study and challenges self-development to meet the enlarging demands of the profession.

According to Mr. Crabtree the salary paid teachers determines to a great extent the type of teaching services the public procures not only for the current year but for years to come:

Pay a teacher adequately for her services and you raise the morale of the faculty and insure well-trained, experienced teachers of sufficient capacity to handle successfully every schoolroom situation.

Approximately all cities over 30,000 in population have adopted definite salary schedules, which set the minimum and maximum salaries and the amount and number of yearly increases. The median salary paid elementary and high-school teachers in all cities of the country in 1924–25 was $2,084. But the salaries paid both teachers and principals differ widely between city and country, between cities and states, between elementary schools and high schools. A number of cities, believing that one year of a child's training is as important as any other year, have adopted a single salary schedule.

The first consideration in deciding teachers' salaries is the child. Too often the school is but an apprentice ground for teachers—a scene of heartache and disappointment where the aspirations of youth are stifled and wrong impressions indelibly made.

THE CIVIC MOTIVE IN THE CHICAGO PUBLIC SCHOOLS

CHARACTERIZING the broad purpose of the public schools as good citizenship, Superintendent William McAndrew has stressed this aspect throughout in his annual report on the Chicago schools for the year ending June 30. He maintains that "you can properly give all school subjects the civic motive."

The civic purpose of becoming a reliable citizen is germane to arithmetic; the general welfare should be realized in good spelling and legible handwriting, both of which are a form of courtesy. But reading, geography and history are peculiarly valuable instruments whereby the teacher is to develop civic ideas: generosity, unselfishness, public spirit, righteousness.

With civic service as the motive, principals and teachers in Chicago are leading a "mastery movement." Boys and girls are encouraged to acquire "the hundred per cent. habit" in the fundamental subjects.

Of the record in spelling for 1926—28 per cent. poor, 21 per cent. fair, 51 per cent. good-excellent, Superintendent McAndrew writes: "This does not satisfy." The results in arithmetic were excellent.

On June 23, 1926, the Department of Instructional Research completed an investigation of the arithmetic work of the upper division of the eighth grade in all the schools in the city. This covered 302 schools. Of these, there were 292 in which every child in the class achieved arithmetic results 100 per cent. correct. Of the fourteen schools not achieving a perfect score, ten were continuation schools in which the teachers meet the pupils only one day a week. I am told by principals who have served in this system for thirty years and more that this record surpasses anything ever achieved in Chicago.

Under the "mastery" proposal, every habit-forming subject is analyzed into "mastery units" and the day's work is so arranged that the slower children are given more time to "get the knack."

During the year mastery drills were emphasized in every elementary and junior high school and in several classes in senior high schools, in arithmetic, spelling and penmanship. Next year manual training, music and other subjects will be reorganized on this basis.

Your principals and teachers have gone along with the general advance of education in the country extending the use of tests as means of teaching. Repeated assertions by participants in educational discussions, by candidates in examinations for higher certificates, indicates an acceptance of the proposition now universally promulgated in teachers' colleges that "tests are the best available instruments of appraisal of school work in every progressive school system." Instead of a device for determining the promotion of pupils your system employs them to determine what the pupils need and what the efficiency of teaching is.

The report tells of a study by thirty-eight Chicago principals of the cause and cure of failures in the public schools of the city. It shows a reduction of failure in the Chicago elementary schools amounting to 21.5 per cent. in the present year. For the year ending June, 1925, 10.3 per cent. of the elementary school pupils failed; in the year ending June, 1926, 7.8 per cent. were recorded as failures. "That is, about 8,000 fewer children failed this year than last. The report shows that this represents a saving of about $640,000 and it con-

cludes that the application of constructive, remedial measures has been the greatest factor in reduction of failure."

DUKE UNIVERSITY

The Boston *Evening Transcript* gives an account, taken from *The Manufacturers' Record*, of plans for Duke University from which we learn that when the present building program is completed, probably within six years, Duke University will consist of approximately sixty buildings, modern in construction and equipment and costing in the neighborhood of $25,000,000.

The university will consist of two sections. One will be the enlarged Trinity College plant, now under construction at a cost of $5,000,000, which will be used as the coordinate college for women when the new development is completed and as the entire Duke University plant until some of the schools and departments are moved to the new plant during the six-year period.

The other section will be the greater Duke University, one mile away from the present site and erected on the top of a plateau rising more than one hundred feet above the surrounding 4,000-acre wooded area. Work is expected to start on actual construction before the end of the year. This section will consist of approximately forty buildings, forming a quadrangle almost a mile in length. The cost is estimated at $18,000,000.

This greater university section will be constructed entirely from the stone supplied by a thirty-acre quarry purchased by Duke University in Orange County, which contains a seemingly unlimited supply of stone of various colors of volcanic formation.

The buildings will be Gothic in design, of massive proportions and conforming throughout. Back of the mile of buildings will be a large lake for aquatic sports, supplied from the university's 1,100-acre tract, which is connected by a narrow neck with the main four-thousand-acre tract and on which the university has riparian rights on both sides of the New Hope River. In front of the building line will be pools, cascades and waterfalls, also supplied from New Hope River.

Dominating the entire group of forty buildings and in the center back of the main court and opposite the main entrance to the campus will be the Memorial Chapel, with its tower extending 250 feet into the air, its inspiration being the Canterbury Tower at Canterbury, England. To the left and right, almost east and west, will extend the two rows of buildings, forming something of a parallelogram, except that the western end bears towards the north, conforming to the topography of the beautiful plateau on which the entire plant is situated.

Next east to the Memorial Chapel will be the administration building, approximately 250 feet long and three stories high. One of the attractive features of this building will be a large room with vaulted ceiling, paneled and embossed, for the hanging of the university's most valuable paintings. Connecting on the east again will be a large library, with a capacity of about eight hundred thousand volumes with something like twenty seminars and twenty research rooms for members of the faculty and about three hundred cubicles for graduate students, as well as graduate reading rooms. The School of Religion building will be next east, with its own library, chapel, classrooms, social rooms, offices and other facilities. The physics, zoology, botany and chemistry buildings follow, each of which will be approximately 275 feet long and four stories high, including basements. The science group will include approximately three million cubic feet.

The Medical School, one of the most important features of the new university, will close the end of the quadrangle. Immediately east of it will be the large hospital and medical staff and nurses' homes. This medical and hospital group will cost approximately $4,000,000, while an additional $6,000,000 was set aside as a part of its endowment. This is expected to be one of the most complete and thorough medical schools in the entire country.

Between the entrance and the medical schools, on the south side of the quadrangle facing the buildings noted above, will be the law school group of buildings, one large classroom building and the groups of buildings to be occupied by the civil and electrical engineering schools. Returning to the center of the middle court and starting westward, on the north side of the Memorial Chapel, will be a large classroom building, and next to it the Union, a building

for student activities that will not be surpassed by any in the country. This union will contain dining-room space for two thousand students, lounge, reading room, library, organization room for every possible organization meeting, café, large reception quarters, including a large reception room, for the faculty, with drawing rooms, faculty dining-room, coat rooms, lounges, reading room and with twenty-five rooms for guests.

Dormitory and fraternity houses will be built to accommodate two thousand students.

THE PAN-PACIFIC CONFERENCE ON EDUCATION

FORMAL invitations have been issued through the State Department to all countries bordering on the Pacific Ocean including those having territorial interests and colonial governments to attend the Pan-Pacific Conference on Education, Rehabilitation, Reclamation and Recreation to be held at Honolulu, Hawaii, on April 11 to April 16, 1927. The conference is being organized and conducted by the Secretary of the Interior under the terms of a law passed at the last session of the Congress.

Among those to whom invitations have been sent are Australia, Canada, Chile, China, Colombia, Dutch East Indies, Ecuador, France, French Cochin-China, Great Britain, India, Japan, Macao, Mexico, Netherlands, New Zealand, Oceania, Panama, Peru, Portugal and Siam. In addition, all territories and outlying parts of the United States have been invited through the appropriate departments of the United States Government to send representatives to the conference. These include Alaska, Canal Zone, Hawaii, Philippines, Porto Rico, Samoa and the Virgin Islands.

Although the conference is planned primarily for Pacific countries and territories, it was stated at the Interior Department, all other countries having an interest in the conference will be welcome. Invitations will be forwarded to any other countries desiring to participate and not already invited. The agenda and program is now in the course of preparation and will be announced in the near future.

In addition to the Secretary of the Interior and officials of the Interior Department, the conference will be attended by official representatives from other departments of the United States Government, including the Departments of State, Treasury, Commerce and Agriculture, and the Federal Board of Vocational Education. It is expected that there will be corresponding official representation on the program from the several countries participating.

Leaders in education, reclamation and kindred subjects representing countries outside the United States will have important parts in the presentation and discussion of topics. Ample provision will also be made for unofficial representatives on the program.

A CELEBRATION IN MEMORY OF PESTALOZZI

THE City of Zurich, Switzerland, is planning a celebration from February 16 to 20, 1927, in memory of the one hundredth anniversary of the death of its eminent son, Heinrich Pestalozzi. Educators from foreign countries, including the United States, have been invited to attend.

St. Peter's Church in Zurich will be the scene of the main memorial service.

The University of Zurich will do homage to Pestalozzi with a special academic program. A "Pestalozzi concert," given by the Teachers Choral Society and the Tonhalle Orchestra, will take place in the Tonhalle, the city's concert hall. In addition a "Pestalozzi exhibition," scheduled to remain for several months, will open in the Central Library of Zurich.

A Swiss school exhibition will be arranged in the Limmatstrasse school for the summer 1927, during which a general conference of Swiss school teachers will take place in Zurich.

Foreign guests will be accompanied by prominent Swiss to Brugg and Birr, one-time scene of Pestalozzi's activity and his last resting place, where another main service is to be held.

Johann Heinrich Pestalozzi was born in Zurich on January 12, 1746, and his birthplace, the "Haus zum Schwarzen Horn," is still shown at 5 Rudenplatz. Adjoining stands the venerable "Haus zum Pflug," the birthplace of Pestalozzi's wife, Anna Schulthess.

THE DEATH OF PRESIDENT TUCKER

DR. WILLIAM JEWETT TUCKER, president emeritus of Dartmouth College, died at Han-

over, N. H., on September 29, aged eighty-seven years. He had been ill for a long time.

Dr. Tucker came to the presidency of Dartmouth in 1893 as the successor to Dr. Samuel Colcord Bartlett, his loyalty to the college leading him to accept the election, which twice previously he had refused. At the time of his inauguration the college was in debt; its enrollment numbered only slightly more than 300 men, and the educational plant consisted of only fifteen inadequate buildings. At his retirement in 1909 Dartmouth had reached an enrollment of more than 1,100 students; more than twenty college buildings had been added to the plant; the amount of the college invested capital had been increased by more than $1,500,000, and the institution had been strengthened and improved at every point.

William Jewett Tucker was born in Griswold, Conn., in 1839. He entered Dartmouth with the class of 1861. Following his graduation he taught school at Laconia, N. H., and Columbus, Ohio, and in 1863 entered Andover Theological Seminary.

In 1876 he was called to the Madison Square Presbyterian Church of New York City, where he remained until 1880 when he accepted the chair of homiletics in Andover Seminary. Dr. Tucker was a founder and editor of the *Andover Review*, and the Andover House movement in Boston was largely due to his personal efforts.

Before assuming the presidency of Dartmouth in 1893 Dr. Tucker had served fourteen years as a member of the Dartmouth Board of Trustees.

He was widely known as a lecturer and was the author of seven books.

EDUCATIONAL NOTES AND NEWS

THE Executive Committee of the National Education Association has chosen Seattle, Wash., for the meeting to be held during the first week of July, 1927.

OCTOBER 4 was the twenty-fifth anniversary of the appointment of Dr. Nicholas Murray Butler as acting president of Columbia University. Dr. Butler served as acting president for three months, and at the end of this period was formally elected president, to succeed Seth Low.

DR. ELMER ELLSWORTH BROWN, chancellor of New York University, will be the guest of honor at a testimonial dinner at the Hotel Waldorf-Astoria, on Monday, November 8, to celebrate the completion of fifteen years of service as head of the university.

DR. JOHN HENRY MACCRACKEN on October 1 retired as president of Lafayette College, after serving for eleven years. At a final chapel service the students of the college gave him a document setting forth their thanks for what he has done for them and for Lafayette. Donald Bishop Prentice, dean of the school of engineering, has been appointed acting president, beginning on October 1.

DR. F. L. RANSOME, formerly of the U. S. Geological Survey, has been appointed dean of the new graduate college of the University of Arizona.

THE inauguration of a new policy in undergraduate administration has been announced by Yale University, with the appointment of Professor Hollon A. Farr, associate professor of German, as class officer for the sophomore class. Under this plan, Professor Farr will virtually be dean for the members of the class of 1929, and will remain their class officer until they graduate.

DR. HOMER E. WARK, formerly professor of theology at Boston University, was inaugurated on October 1 as president of West Virginia Wesleyan College. The ceremony was conducted by Bishop Francis J. McConnell, of Pittsburgh.

GRADY GAMMAGE, vice-president of the Northern Arizona State Teachers College and in charge of the training school, has been elected president of the college, to succeed Dr. F. A. Cotton, who recently resigned.

DR. ROBERT DODGE BALDWIN, who received this year the doctorate of philosophy from Cornell University, has taken up his work as president of the State Normal School at Stevens Point, Wis.

SUPERINTENDENT HARVEY ALLEN, of the public schools of Guthrie, Oklahoma, has been

elected president of Findlay College, Ohio, to succeed Dr. W. H. Guyer, who died last July.

PROFESSOR C. B. GOULDING has been elected president of Urbana Junior College, Ohio, succeeding President Henry Schradiech, who resigned last May.

C. J. ANDERSON, for five years assistant state superintendent of public instruction of Wisconsin, has resigned to accept a position as associate professor of education at the University of Wisconsin. Mr. Anderson will be succeeded by O. H. Plenzke, president of the Wisconsin City Superintendents' Association and for the past eight years superintendent of the Menasha City schools.

DR. C. C. CRAWFORD, professor of secondary education of the University of Idaho, resigned during the summer to take a similar position in the University of Southern California. His place has been filled by Dr. Ralph D. Russell, of the University of Iowa. Professor F. E. Armstrong, professor of agricultural education, resigned to take a position in the University of Hawaii. His place has been filled by Mr. Herbert E. Lattig, M.S.(Ed.), University of Idaho.

CARL W. SIEGLER, of Scranton, Pa., has been appointed assistant professor of education at Lafayette College, and George H. Fickes has been appointed assistant professor of religious education.

DR. JOHN RUFI has been promoted to a full professorship in the department of education at the Michigan State College, East Lansing, Mich.

A. R. RYDER, for the past two years a graduate student in the University of Chicago, has been appointed assistant professor of education in Purdue University.

DR. CLYDE L. KING, secretary of the Commonwealth of Pennsylvania and state budget officer, will resign on October 15 to resume his position as professor of political science at the University of Pennsylvania.

PROFESSOR WILLIAM H. LIGHTY, director of the Department of Extension Teaching of the University of Wisconsin Extension Division, was elected to the presidency of the National University Extension Association at its recent convention at Salt Lake City. Professor Lighty has been a leader in the development of extension teaching in Wisconsin, beginning his association with it in 1906, at the time the Extension Division was established under the late President Charles R. Van Hise.

MRS. GRACE DRISCOLL MULLOWNEY, who was formerly a teacher in the schools of Brookline, Mass., has been appointed a member of the school committee to succeed her father, the late Michael Driscoll.

FRANK H. DAMON, of the University of Maine, has become principal of Mount Ida School at Newton, Mass., and is effecting a reorganization of the school's work.

WILLIAM M. MEACHAM, of Barton, Vt., has been chosen superintendent of the Farm and Trades School on Thompson's Island, Mass., and will begin his duties there some time during the latter part of November.

SUPERINTENDENT H. M. AULSBURY, of the Campbell, Missouri, schools, has been elected superintendent of the Bloomfield District No. 2, Missouri, at a salary of $3,000.

PROFESSOR BURT LOOMIS, of Maryville Teachers College, has resigned to become superintendent of schools at Flat River, Missouri.

WORD has been received at Harvard University of the appointment of Dean Roscoe Pound of the Law School as a member of a new standing advisory committee for the juristic section of the Institut International de Coopération Intellectuelle, newly created by the League of Nations. The nine members of the committee are: Dr. Simons, president of the Supreme Judicial Tribunal of Germany; M. Adatci, Japanese ambassador at Brussels, and member of the Japanese Academy of Science; Professor Altamira, of Madrid; Professor Anzilotti, of Rome, and Professor Bustamante, of Havana, members of the World Court at the Hague; Professor Edward Jenks, of the University of London; Professor Roscoe Pound, dean of the Harvard Law School; Dr. André Weiss, of the University of Paris, vice-president of the French Academy of Sciences and member of the World Court, and Professor Elemer Balogh, of the University of Kovno, general secretary of the International Academy of Comparative Law.

DR. HENRY SLOANE COFFIN has been elected president of the board of trustees of Robert College, Constantinople, to succeed Cleveland H. Dodge, who held that office for seventeen years.

B. E. MCCORMICK, for many years at the head of the La Crosse city schools, was elected secretary of the Alumni Association of the University of Wisconsin and entered upon the duties of that office August 15.

JOSEPH F. WINGEBACH has retired as principal of P. S. 66, Brooklyn, N. Y., the Lew Wallace Junior High School, to become eastern circulation manager of the *Christian Science Monitor*.

MAX A. NORTON, former graduate manager of athletics at Dartmouth College, has been appointed to the newly-created office of bursar of the college.

DEAN WILLARD L. SPERRY, of the Harvard Theological School, is to be absent on leave during the second half-year in residence at Oxford. He is to deliver the Upton lectures at Manchester College, Oxford, in the spring and to give two Hibbert lectures for the Hibbert trustees. During his absence Dr. Charles E. Park will have charge of the work in practical theology.

DR. WALLACE W. ATWOOD, president of Clark University, left Worcester on September 11 for a trip to Japan. Dr. Atwood will stop at St. Paul and Minneapolis to deliver several lectures on geography and will sail from Seattle on October 13. He will also visit China for the purpose of geographical research. He plans to be back in Worcester at the beginning of the second semester.

PROFESSOR THEODORE VON KARMAN, head of the Aerodynamical Laboratories at Aachen, Germany, will visit the Massachusetts Institute of Technology, New York University, the University of Michigan, the California Institute, Stanford, and other universities as a lecturer this fall. He is coming to this country at the invitation of the Daniel Guggenheim Fund for the Promotion of Aeronautics, in order that educational and research institutions here may have the benefit of his experience and advice.

DR. ARTHUR C. NORTON, professor of the history and principles of education at Wellesley College, is resuming his teaching after a leave of absence last year.

DR. WILLIAM M. DAVIS, emeritus professor of physiography at Harvard University, will lecture at the University of Arizona during the second semester. It is said that an effort will be made to induce him to become a regular member of the faculty.

M. GABRIEL MILLET, an authority on Byzantine art, will give a series of twenty lectures, beginning on October 11, at Princeton University under the foundation provided by Mr. Otto Kahn and others.

UNDER the auspices of the Boston University School of Education, Dr. D. A. Thom, director of the Massachusetts State Division of Mental Hygiene, gave an address at Boston University on September 28 on "Understanding the Pre-School Child."

MRS. BEATRICE ENSOR, of the New Education Fellowship, gave an address before the National Union of Women Teachers in London on "The new methods of the progressive schools of America." Mrs. Ensor visited the United States last spring.

H. O. WELLER, who established the Building Research Station under the British Department of Scientific and Industrial Research, has sailed for Kenya as supervisor of technical education.

THE REVEREND DR. FRANKLIN PIERCE RAMSEY, successively president of Fredericksburg Presbyterian College, Va., and of Oxford College, Oxford, Ala., and later professor of philosophy in the Southwestern Presbyterian University, the University of Omaha, and Kendall College, at Tulsa, Okla., died on October 1.

HOWARD B. POOLE, assistant professor of Romance languages at the University of Colorado, who had been elected in the spring to a similar position at Lafayette College, died on July 26. The college has received from Mrs. Poole over two hundred volumes of French and Spanish literature as a memorial to her husband, who had expressed the wish that they be given to the college which he had hoped to serve.

THE deaths are announced of Allen B. Doggett, a teacher of art in a public high school in New York City; of Isaac Lothrop Rogers, for

more than twenty-five years connected with the Morse and Rogers School for boys, New York City; of Mary A. Laselle, who taught for twenty years in the schools of Newton, Mass.; of Elizabeth F. Ingram, a teacher in the schools of Wakefield, Mass., for more than fifty years, and of Susan Perry Peckham, formerly for twenty years principal of the Friends' School in Brooklyn, N. Y.

THE United States Civil Service Commission announces the following open competitive examination for educationist (teacher training). Applications must be on file at Washington, D. C., not later than November 9. The examination is to fill a vacancy in the Bureau of Education, Department of the Interior, and vacancies occurring in positions requiring similar qualifications. The entrance salary is $3,800 a year. After the probational period required by the civil service act and rules advancement in pay without material change in duties may be made to higher rates within the pay range for the grade, up to a maximum of $5,000 a year. Promotion to higher grades may be made in accordance with the civil service rules as vacancies occur. The duties will include planning and carrying out of research studies in the field of teacher training in universities and colleges, normal schools and teachers' colleges, including the organization and content of courses of study used to train teachers; the types and functions of teacher-training courses in high schools and private agencies; and the requirements for teacher-training positions; also holding of conferences, conduct of special surveys and service in advisory capacity to persons interested in the training and employment of teachers; preparation of bulletins, leaflets, circulars and other material for publication. The work requires the exercise of independent judgment in planning and prosecution and acceptance of individual responsibility for results. Competitors will be rated on their education and experience and publications or thesis to be filed with the application.

APPLICATIONS for fellowships under the C. R. B. Foundation for study in Belgium must reach the Fellowship Committee, 42 Broadway, New York, N. Y., before December 15, for appointments for the following academic year. Successful candidates will be notified before March 1. A candidate for a fellowship, to be eligible, must (1) be an American citizen; (2) have a thorough speaking and reading knowledge of French; (3) be a member of the faculty of an American college, university, or research institute, and have the intention of continuing in academic teaching or research; (4) have definite plans for his proposed work in Belgium; (5) be capable of independent study or research; (6) be in good health. The fellowships are awarded for a period of twelve months, each to carry a minimum stipend of $150.00 monthly together with allowances for first-class traveling expenses from the residence or university of the fellow in the United States to and from Belgium. American fellows will be required to reside and pursue their work in Belgium for at least seven months in any one fellowship year.

FOR the year 1926–1927 the Sachs Endowment Fund of Teachers College, Columbia University, offers a prize of one thousand dollars for the best essay or treatise on "The aims and methods of science teaching in the successive stages of a secondary school, and the intellectual equipment of the teacher that will enable him to put these aims into practice." All manuscripts must be in the hands of the Dean of Teachers College, Columbia University, on or before December 1, 1926. The rules governing the competition for the science prize may be secured from the Secretary of Teachers College, 525 West 120th Street, New York City.

MRS. ANNA L. RAYMOND has given $150,000 to be used in extension of the legal clinic of the law school of Northwestern University.

ROBERT P. LAMONT, of Lake Forest, president of the American Steel Foundries Company, has given $100,000 to the University of Michigan for a woman's league building.

THE Graduate Division of the School of Education, New York University, has announced the establishment of new courses for college teachers leading to the degrees of master of arts and doctor of philosophy and a course in college education to cover the teaching of freshmen in college.

PROFESSOR J. O. CREAGER, formerly of the

University of Arizona, will conduct the classes for college teachers and college education. The division has been created to supply the needs of those students who plan to teach in institutions of higher learning.

LEW WENTZ, of Ponca City, Okla., has established a foundation which he has endowed with $100,000 for students of the Oklahoma Agricultural and Mechanical College at Stillwater and the University of Oklahoma at Norman. The income of the fund will be loaned to students other than freshmen at a low rate of interest.

BUILDINGS costing one million dollars have been completed recently, or will be constructed soon, at the University of Oklahoma and at the state hospital at Norman. The university buildings are the following: The new Liberal Arts building just completed at a cost of $186,000; the two new residence halls for women, at a total cost of $300,000, and the new $186,000 physical education building, upon which the construction has been begun. An appropriation for a new library building for the University of Oklahoma will be asked of the next session of the legislature, in an effort to provide proper library facilities for work leading to the doctor of philosophy degree. Should the new building be secured, the doctor of philosophy degree will be offered within two years. President W. B. Bizzell plans to increase the faculty of the graduate school in order that the instructors may do the minimum amount of teaching and devote much time to research work.

GROUND has been broken for "the Cathedral of Learning" at the University of Pittsburgh. This building is to be 29 stories high, under revised plans. No special ceremonies marked the beginning of work.

IT is reported that the plan for the merger of the Case School of Applied Science with Western Reserve University has been abandoned, at least for the present.

DR. J. KNOX MONTGOMERY, president of Muskingum College, has announced that Franklin College will merge with Muskingum on March 18, 1927, when there will be a celebration of the ninetieth anniversary of the founding of the college.

AN exhaustive survey of the teacher training facilities and other problems of New Jersey's five normal schools is to be made by State Commissioner of Education John H. Logan to formulate a ten-year program of expansion and improvement. The study will be made with the authority of Governor Moore and with the cooperation of the State Board and the five normal school principals. Professor G. C. Gamble, of the Teachers College of Greeley, Colo., will be technical adviser and now is engaged in preliminary analysis. Dr. Gamble made similar studies of Kentucky, Tennessee and Colorado colleges and city schools of Hackensack, Chicago, Atlanta and Baltimore. It is planned to include such questions as the financing of teacher training, building program, courses of study for the training schools, economy of administration, the question of specialization in the separate schools, the very important question of the development of a teachers' training college for the preparation of high school teachers and a program of extension work to be connected with the normal schools and the proposed teachers' college.

HARVARD UNIVERSITY has opened with a first-day enrollment of 7,305, as compared with 6,955 a year ago. The Graduate School of Education registered 165, or thirteen more than the first day in 1925. Harvard College has 3,208 students, the largest enrollment in its history.

AS a result of the protests of the students at the New York City College last year, an alternative course of civilian training has been instituted. This course is under faculty supervision, while the course in military training is under army officers.

PUPILS of the John Swett Grammar School at Oakland, California, are on strike because Chinese students not expecting to become American citizens have been admitted to the school. A meeting of parents has been called to demand the segregation of Asiatics.

THE Supreme Court of Nebraska has handed down a decision to the effect that properly qualified teachers are entitled to certification regardless of age.

THE *Ohio Teacher* reports that a test case is being carried through the Ohio state courts by Superintendent C. P. Lynch, of the Lakewood

Board of Education, to determine whether or not city boards of education have the authority to grant salary increases to superintendents during the term of the superintendent's contract. The question was raised when the state inspector filed an objection to a ruling of the state attorney-general in the case of the Lakewood superintendent. School officials hold that the superintendent is a board employee and therefore may be granted a salary increase. The state law states that publicly elected officials may not accept salary increases during the term of the office to which they were elected.

BIDS for the new library building at Boston College have been opened and as soon as possible work will be started on the $500,000 structure. Architecturally, and in keeping with its function, the library will be one of the most important buildings of this group. Its commanding relation at the junction of Commonwealth Avenue and South Street, moreover, will serve to emphasize the library in point of public interest. The plans by Maginnis & Walsh, architects, provide for an L-shaped building, the larger arm facing the faculty building and of substantially corresponding mass, and the smaller arm facing towards Commonwealth Avenue. The chief entrance for students will be on the east side. The lobby will be twenty-eight by sixty-eight feet and out of it will rise the great staircase. The assembly hall has been designed to accommodate the entire student body until the permanent hall is ready in the gymnasium building to be constructed south of the recitation building. The space occupied by the basement assembly hall will ultimately become a great stack room doubling the capacity of 600,000 volumes now planned for the first-story rooms. There will be three large rooms where students may come in class to take advantage of access to the stacks. The main reading room will be over three stacks and will be sixty-five by 106 feet. Fourteen alcoves will give seclusion for study and there will be a librarian's and other rooms. In the wing at the north of the reading room there will be special study rooms—thirty-two by sixty-four feet and thirty-two by forty-seven feet. The equipment will be the best obtainable.

DISCUSSION

1926 AS A CENTENNIAL YEAR IN THE HISTORY OF EDUCATION

IT is interesting to observe various significant events in the history of education for which the year 1926 is a centennial year. In the multiplicity of special "days" and "weeks" which have been inflicted on the educational calendar in the past few years, it may seem superfluous to suggest the addition of any others. Yet such a list as the one given below may contain useful suggestions to superintendents, principals, program committees and others who may be in search of suitable topics for consideration for programs for institutes, conventions, education clubs, teachers' meetings, assembly talks, luncheon club addresses or special reports in education classes.

May it not be well worth while in the busy life of the present to pause to consider the significance of some of the events in the development of education and to reflect on the growth that has taken place in the one, two or more centuries that have intervened since the occurrence of these milestones in educational progress? Why not a "Jefferson Day," a "Girls' High School Week," a "Journal of Education Commemoration," a "Bacon Tri-centennial," an "Independence of Latin Celebration"?

Below is given a list of such centennial dates which may be of some interest to the educational world. Further information concerning them may be found by consulting the standard histories and encyclopedias of education.

826. Decree of the Lateran Church Council regarding establishment on the continent of Europe of Cathedral schools, the basis of the secondary school system of the early Middle Ages.

1126. Birth of Averroes, the Moslem who tried to unite the philosophy of Aristotle and Mohammed, whose translated writings had great influence in the later Middle Ages—"The greatest commentator on Aristotle from the days of Rome to the time of the Renaissance"—(Cubberley).

1426. Building for the grammar school at Stratford-on-Avon, England, constructed. (Restored in 1892.)

1526. Establishment of the Royal Press in Paris,

a prominent influence in the spread of the New Learning.

1526. Opening of the Nuremberg school in Germany, planned by Melanchthon, one of the first of the new humanistic schools.

1526. Publication of Tyndale's translation of the New Testament which virtually fixed the character of the English Language.

1526. Paracelsus, one of the founders of modern chemistry, professor at the University of Basle, broke with medieval tradition by refusing to lecture in Latin.

1626. Death of Francis Bacon, English statesman and philosopher, "The Father of Modern Science" and of modern scientific methods.

1626. Death of Gunter, important in the development of trigonometry and computation of trigonometric tables, after whom "Gunter's Chain," used in land surveying in United States, was named.

1726. Publication of "Gulliver's Travels" which, with "Pilgrim's Progress" and "Robinson Crusoe," was a powerful stimulus to the common people to learn to read.

1726. Establishment of the Hollis Professorship of Mathematics at Harvard College, first endowed professorship of mathematics in America.

1826. Death of Thomas Jefferson, author of the Declaration of Independence, founder of the University of Virginia, and author of the Statute for Religious Freedom in Virginia.

1826. Founding of the "Society for the Diffusion of Useful Knowledge" by Lord Brougham, important educational influence of the nineteenth century in England.

1826. Publication of Froebel's most important pedagogical work, "The Education of Man."

1826. Founding of the American *Journal of Education* at Boston by William Russell.

1826. Institution of a state system of Lancastrian monitorial schools by the state of Maryland.

1826. First state school superintendent of Maryland elected.

1826. First high school for girls in the United States opened in Boston.

1826. Death of J. F. Oberlin, French clergyman, founder of the first infant school known.

1826. Publication of Warren Colburn's "Arithmetic upon the Inductive Method of Instruction," important influence in early American mathematical instruction.

1826. Liebig in Germany institutes first laboratory instruction in chemistry in any university.

WALTER CROSBY EELLS
WHITMAN COLLEGE

RELATIVE ABILITIES IN MATHEMATICS OF BOYS AND GIRLS

F. SANDON recently published an interesting article on the widely discussed question whether there is a noticeable difference in the mathematical abilities of boys and girls.[1] He expressed the opinion that general impressions are worthless for the solution of this question, and that it can be solved only by statistical methods. This question is of somewhat special interest to American teachers at present in view of the fact that the American Mathematical Society recently invited a woman, Mrs. A. J. Pell Wheeler, to give some of the lectures at its next colloquium to be held at Madison, Wisconsin, in the summer of 1927. These lectures are intended to direct special attention to inviting fields of modern mathematical research by authorities on their subjects and have up to the present been given only by men.

Mr. Sandon opens his article with a reference to the memorandum from the Girls' Schools' Committee of the British Mathematical Association in which this committee deprecates the use of the term "inferiority" as applied to girls' mathematical work by the report on the differentiation of curricula between the sexes. From the somewhat meager data which he collected and analyzed the following results appear to emerge: (1) In a particular division of a mixed school the boys are better at mathematics than the girls; (2) that if the girls are chosen equal to the boys in some mathematical subject they are not equal to the boys in other such subjects.

G. A. MILLER
UNIVERSITY OF ILLINOIS

QUOTATIONS

DR. TUCKER OF DARTMOUTH COLLEGE

THE seventeen years beyond his threescore and ten that Dr. William J. Tucker lived in retirement since his resignation as president of

[1] *Mathematical Gazette*, Vol. 13 (1926), page 115.

Dartmouth College did not dim his achievement in the eyes of those whose memories go back even a little way into the nineteenth century, out of which he came an eloquent preacher and a great teacher into the college world of the twentieth century. Under him the institution of which Webster said, "It is a small college, but there are those who love it," became a large college without diminished devotion. Not only did he lift it out of the financial debt in which he found it, but he put it among the great national institutions of higher education.

In speaking twenty-five years ago of the famous Dartmouth College case, he said that before the college had found a shelter in the wilderness it had been introduced to the Royal Chamber of Great Britain and gained entrance into the most honored families of England, whence it got its corporate name, and that the very animosities and strifes which came in the early days gave to the country the name of a case which was to affect the legal, political and economic interest of the country for many generations. The college "became nationalized by the process." Dr. Tucker, more than any one other man before his coming, won for it a national constituency, comporting with the national fame which Webster's eloquence and Marshall's decision had given it. Indeed, it is now one of the efforts in the new scheme of admissions to insure a national geographical distribution of students while recognizing the demands of its more immediate New England environment and seeking to meet the claims which graduates make for their sons.

It was not merely the physical growth of Dartmouth and the addition of large funds to its resources that came in President Tucker's administration. The curriculum was liberalized, as in other institutions, but with this distinctive purpose: he sought to bring them all under what he called the "idealizing process." He thought "reverently of all knowledge," he insisted upon work as a moral discipline and he held all intellectual attainments and achievements as tributary to social good. He was not afraid of "useful knowledge." If utility could create the knowing mind, he said that he wanted its aid. He would accept at any time "the moral result of serious thinking on the inferior subject in place of less serious thinking upon the greater subject." Though a theologian and one of the last of the clerical college presidents, he found no value in the "gymnastics of the old dialectics." Even discourse about God was not necessarily religious or moral. But he believed that his idealizing process in the treatment of all knowledge would result in righteousness.

It was under the leadership of such a liberal, lofty spirit that the Dartmouth College which had been the private school of Eleazer Wheelock in the wilderness, primarily for Indians, and the small college of Webster's day, rose to giant stature even among twentieth century colleges and to a nation-wide "public-minded" service. It is of auspicious promise that one who was as an Elisha to him succeeded, after an interval, to the office of president of Dartmouth. The mantle of Tucker is upon the shoulders of Hopkins. —*The New York Times.*

BOOKS AND LITERATURE

RECENT BOOKS

A Survey of the Public Educational System of Porto Rico. Made under the direction of the International Institute of Teachers College, Columbia University. New York, Teachers College, Columbia University, 1926. 453 pp.

THIS is the report of the survey made in the winter of 1925–26, under the direction of Dr. Paul Monroe, of the International Institute. In the foreword to the report, reviewing the quarter of a century of educational achievement in Porto Rico, the survey commission says: "The history of education in Continental United States shows no parallel achievement. . . . Both in self-denying devotion to the cause of education and in the speed with which the instrumentalities of training have been created, the continent has been surpassed by this youngest American commonwealth."

Not that everything is perfect, by a good deal. The report is very frank in its analysis of the good and bad points alike—just as the institute was in its lengthier study of the Philippine Islands. Definite recommendations are made, embodying real changes from present practice. The various sections of the report include a thorough treatment of economic and social background; results of an elaborate measurement program carried out with great care;

and separate discussions of elementary education, secondary education, the teaching staff and teacher training, general school administration and supervision, and educational finance in Porto Rico, with a comprehensive study of the University of Porto Rico.

Typical of the frank and direct method of the report is the concluding statement on the university:

> In many respects the report has been uncomplimentary to the university. It has revealed serious deficiencies and the presence of extraordinary handicaps. The criticism has been frank, because the commission believes that frankness will be helpful. . . . But the commission would not close its review on a note of criticism. It is emphatically of the opinion that the prospects of the university are unusually bright. The island needs a strong university and the leaders of thought in the island are keenly aware of the need. The university now has leadership, it has support, and it has a program. Its future as a potent agency for the public welfare seems assured.

Modern Methods in High School Teaching. By HARL R. DOUGLASS, Boston, Houghton Mifflin, 1926, 544 pp.

THE "numerous and important recent developments in teaching practice" are brought together in this book—"supervised study, socialized class procedure, visual instruction, problem and project methods, class-room provision for individual differences, and scientific class-room testing and experimentation."

While a decided improvement over most of the books on secondary education, Dr. Douglass' book is still encumbered with an immense amount of the "pedaguese" that writers on high-school teaching seem unable to work free of. "Outcomes of teaching and their development"; "questioning, assignment, review procedure"; "technique of using visual aids"; "technique of socialized procedure"; "the technique of controlled class-room experimentation" —all clutter up a discussion that in many other respects is eminently practical and worth while. In this respect writing on secondary school teaching is very much like what was done on elementary method a quarter of a century ago; one can only pray that this period will pass, just as it has passed gloriously in books on elementary teaching.

The most satisfactory chapters in Professor Douglass' book are those that deal with problem and project teaching (though even here he has difficulty in getting away from certain unnecessary technical terms) and with adjustment of instruction to individual needs and differences. The Winnetka and Dalton plans are both described in brief, and the advantages and disadvantages of both are summed up.

State Support for Public Schools. By PAUL R. MORT. New York, Teachers College, Columbia University, 1926. 104 pp.

PROFESSOR MORT'S volume is the first in a series of contributions in the field of educational administration to be issued by the Bureau of Publications of Teachers College. It analyzes methods of state aid in the light of the educational finance inquiry and other researches, showing that the two purposes that have controlled attempts to build state aid system for the past two decades—equalization of educational opportunity and payment for effort—are incompatible. The author believes that in the future development of state aid "payment for effort" will be either entirely eliminated or reduced to a minimum. He attempts to apply the principle of equalization as interpreted in the finance inquiry study in (1) determining the content and cost of the minimum program; (2) setting up a method of equalizing the burden; (3) providing for proper administration.

Part II of Professor Mort's study is given over to an explanation of the techniques involved in the development of a satisfactory system of state support for public schools—the weighted pupil, the typical teacher, computation of educational need, the optimum key district for determining the local rate of contribution, the optimum combination of large and small fund methods of distribution.

Labor Problems. By EDGAR S. FURNIS, with the collaboration of LAURENCE R. GUILD. Boston, New York, etc., Houghton Mifflin Company, 1925. 621 pp.

INTENDED primarily to serve the needs of students in general courses in labor problems, this book is also published "in the hope that other workers will find it equally useful." Besides the usual topics of unemployment, wages,

hours of labor, child and woman labor and industrial accidents, the volume includes a useful brief history of the organized labor movement, a careful statement of the economic, social and political program of labor, a description of various agencies of industrial peace, and some analysis of such industrial relations policies as profit and ownership-sharing and employee representation. The book is one of the few dealing with labor or education that gives labor due credit for the modern school system. "It is not generally known," say the authors, "that to the organized labor movement of Massachusetts belongs the credit of establishing public schools in Massachusetts and the general public school system as it has since developed."

Education for Responsibility. By members of the faculty of the South Philadelphia High School for Girls. New York, Macmillan, 1926. 310 pp.

THIS is an account of three years of experience with the Dalton laboratory plan in a large secondary school—the South Philadelphia High School for Girls. "I sympathize with those who object to the words 'Dalton Plan,'" says Dr. Lucy L. W. Wilson, head of the school, in her opening chapter. "It is as inept as 'Holy Roman Empire' or 'English Public Schools,' for the educational system so-called is neither Dalton nor merely a plan. Rather, it is a coordinating principle, helping as to synthesize what has been taught by our educational leaders."

Dr. Wilson states the fundamental principles of the plan, as interpreted in South Philadelphia, as follows: (1) Individualized instruction, so that each child may work to capacity, in spite of great individual differences; (2) freedom, with stabilizing responsibility, so that each child may work at his own speed, in his own time; (3) a stabilized environment: community living, so that each child may be not merely "an intelligent participator in the life of the immediate group, but also a part of the still greater objective."

Specific information is given on the assignment; teaching technique; school organization; the Dalton plan in English; in history; in science; in mathematics; in languages; in art. There is also a helpful bibliography.

Measurement of Intelligence by Drawings. By FLORENCE L. GOODENOUGH, Yonkers-on-Hudson. World Book, 1926. 177 pp.

DR. GOODENOUGH has worked out a scale of children's drawings of the human form that leads Professor Terman in his introduction to say that "an acquaintance with the test should become part of the standard equipment of teachers in the kindergarten and primary grades." Professor Terman briefly characterizes the scale as follows:

(1) It utilizes nothing but the child's drawing of a man.

(2) It is accordingly non-verbal.

(3) It requires no more than ten minutes for testing an entire class, plus about two minutes per child for scoring.

(4) It is useful chiefly with children from mental age 4 to mental age 10.

(5) Its reliability for a single unselected age group in this range lies between .80 and .90.

(6) For separate age groups in the same range it yields an average correlation of .76 with the Stanford Revision of the Binet Scale.

Dr. Goodenough's volume includes a careful historical study which takes into account the investigations made during the child-study movement; a description of the experimental basis of the drawing test; results of the test, and a chapter on psychological interpretation of children's drawings. Part II of the book contains the procedure and directions for scoring and specimen drawings with the scoring indicated. The bibliography has 192 selected references.

The Problems of Childhood. By ANGELO PATRI. New York, Appleton, 1926. 309 pp.

"IF you'll come upstairs and make them behave, I'll teach them," said a tearful beginner, as quoted in Angelo Patri's foreword, and the book is written, Mr. Patri explains, primarily for the "teacher in training, the beginner, the new teacher, the troubled teacher."

The preface is followed by a characteristic appreciation of "Angelo" by William McAndrew, and then come a series of various short papers, seldom more than two book pages long, of the type familiar to newspaper readers of Mr. Patri's syndicated material of the past

five or six years, which he and Clinton E. Carpenter, the editor, have grouped about some half a dozen central themes. Titles of some of the best articles are: "Happiness"; "The Normal Child"; "Think Easy"; "The Lazy Boy"; "Underclothes"; "The Hundredth Child"; "Who Is Fit?"; "Fear"; "When in Doubt"; "No Bad Children"; "Too Fast for the School"; "Graded"; "Discipline Through Beauty"; "Gimme"; "The Playground"; "To the Boards of Education."

Human Conduct and the Law. By MARY C. LOVE. Menasha, Wis., The Collegiate Press, 1925. 317 pp.

A STUDY of law-making to assist in finding "a working knowledge of human nature" as the greatest challenge to intelligence. The author, who is the president of Chi Omega, "a society of college women devoted to fine fellowship and progress," believes that

> education in the sources and color of conduct, instincts, emotions, sentiments, character, and reasoning should rank with the three R's as a fundamental.

She insists, however, that such education must have a flexibility that invites the open mind, quickens imagination and "affords the freedom necessary for creative thinkers." She adds:

> It is waste not to educate people in motivation, of themselves and their fellows. If psychology fits a man to a job it has not solved one half of his problems. He has yet to deal with his own impulses, his striving for a higher place, his fear of the man above or below him, and the motivations of those above or below him. It is in this struggle, not in the work of the job, that people's hearts are wrung. We believe that the struggle could be eased, that people could pick their way with greater serenity, with less of pugnacity and fear, if they knew clearly the mainsprings of conduct.

W. C. R.

REPORTS

A SURVEY OF TRANSPORTATION EDUCATION

THE findings have been reported of a survey of instruction given in American universities and technical schools in the field of transportation. The study extended over a year during which Victor Topping and S. James Dempsey, in behalf of a committee of Yale University, visited and inspected twenty-three educational institutions and about one hundred agencies connected with various phases of transport, railway, highway, water way and airway. More than 300 leaders in the transportation and traffic fields were interviewed. The report will furnish the basis of suggestions to the president and corporation of Yale for a program to pursue in the general field of transportation.

"An understanding by the general public of the broad problems of transportation such as will tend to direct the course of legislation along sound economic lines is vital to progress," the report states. "The history of regulation of public utilities in general is the history of the study and the understanding of the relations of these industries to the public welfare."

"The idea of an educational institution of any kind attempting to turn out transportation experts is very popularly questioned." The investigators declare, however, that training in the economic or engineering features of any form of transportation does not carry with it the presumption that the man who has pursued such a course is in any way an expert, "nor is it intended that he should be." Nevertheless, "analogy with other industries would seem to show that men trained in the fundamental principles involved, should, if their other qualities measure up, at least to the average, have a decided advantage on entering the field."

In the institutions of learning the investigators found that, on the whole, attempts to provide instruction in transportation were sporadic and incomplete.

The subject needs revitalizing, and until this is done the existing lamentable lack of interest on the part of students will continue. To rekindle the spark of enthusiasm among students and instructors, the interest and support of the practical work of transportation is necessary, whether courses be of a general cultural scientific or vocational character. Unfortunately, some transportation officials are outspoken in their condemnation of the college man and his utility in the transportation industry. University men are often said to be "poor pluggers"; they will not stick; they

overrate their ability and usefulness to the company, and are impatient of promotion.

The report says, however, that this attitude was not manifested by all, "for there is a growing body of executives who are alive to the possibilities of personnel recruited from the ranks of men grounded in transportation matters, and who recognize that apart from the utility of the universities as a possible source of trained personnel, the value to the transportation agencies of a body of scientific thinkers, interested chiefly in the discovery of facts, should be incalculable."

The investigators regard the cooperative courses, in which periods of university instruction alternate with periods of shop experience, as limited in operation. "Few employers will look favorably upon the disruption of their working organization brought about by the constant change of men which is inherent in the system. . . . Even in the engineering departments the number of men who can be absorbed by companies favoring the system is very limited and conditions surrounding the industry in general inhibit the employment of any surplus by other roads."

The improvements which the research workers suggest as a basis of future work in transportation in the colleges are: (1) the revision of the economic curricula along defined lines; (2) the cooperation of economic and engineering faculties; (3) the cooperation of the universities and those engaged in the different branches of the transportation industry; (4) the division of the field so that all phases are accorded due attention.

EDUCATIONAL RESEARCH AND STATISTICS

DRAWING A FACTOR IN THE TRAINING OF STUDENTS IN A COURSE IN GENERAL ZOOLOGY

INTRODUCTION

THE present study forms an argument for training as part of laboratory work in science. A few years ago the writer showed that the students of certain high-school teachers did better in the course in general zoology at the University of Pennsylvania than the students of other teachers and that the difference was due to the character of the laboratory work. Some teachers trained their students and some did not.[1] Training was possible.

By selecting a simple measurable factor in the course in general zoology and studying this factor at the beginning and again at the end of the course, an attempt is made to determine the effect of training in one concrete case. Graphic representation was selected because it could be measured and the results could be treated by statistical methods. Although the experiment is subject to two kinds of criticism, neither affects the general conclusion.

METHOD

Two hundred and forty-nine students were asked to make a drawing of the side view of a grasshopper as part of their first day's laboratory work. One hour was allowed for this drawing. At the end of the course (the students had had six hours a week of laboratory work over a period of four months), the same animal was given again, under the same conditions with, however, one difference. In the beginning of the course each student could examine the grasshopper in his hand. At the end the grasshoppers were mounted in Riker mounts. This fact made the final observations more difficult and had the tendency to lower the final score. The general conclusions are not altered, as all students were treated alike. This disposes of criticism number one.

Several years ago a series of drawings of the side view of a grasshopper were selected, given scores ranging from 40 to 80, five scores in all, and pasted on a piece of muslin. The drawings of the students at the beginning and at the end of the course were matched to this scale. Because the judgment of each drawing is the resultant of two factors, observation of details and proportion, the method is open to another criticism. For this reason a drawing might be placed in either one of two adjoining classes. A consistent bias for one of the factors would not affect the final conclusions. On the other hand, if the score was a random

[1] "Do we train or do we merely select?" H. S. Colton, *School, Science and Mathematics*, Vol. XXIV, No. 7, October, 1924.

sample, the large number of judgments would tend to neutralize one another.

To test the improvement or lack of improvement in the drawing, the results of the second test were plotted against the results of the first test and the means derived. This was done separately for the following categories of students: (1) All students (249); (2) students who received a grade of distinguished or good in the course (36.1 per cent); (3) students in the just passing group (44.6 per cent); (4) those who received a condition or who failed in the course (19.3 per cent). Table one shows the distribution of the means. In table two the score of the first test is subtracted from the means of the second test. This difference is a convenient measure of the performance of the students. If the figure is minus, the student did not do so well in the first test as in the second test. If the sign is plus there was an improvement.[2]

TABLE I

Score of the first test	Means of the second test			
	All grades	Distinguished or good	Passed	Conditioned or failed
80	63.6	70.0	60.0	55.0
70	56.4	62.5	60.0	.....
60	57.3	58.5	56.7	55.7
50	55.1	55.6	54.4	56.4
40	49.8	51.6	50.3	47.8

(2) The students who did well in the course as a whole, receiving a final grade of distinguished or good, and also did well in the first drawing test (7 or 8) did not do as poorly in the second as the passed or conditioned students who made the same score (7 or 8) in the first test.

(3) Conversely, the students who did well in the course receiving a final grade of distinguished or good and received a low score in the first drawing (4) showed more improvement in the second drawing than the passed or conditioned students.

TABLE II

Score of the first test	Difference score of the first test and the means of the second			
	All grades	Distinguished or good	Passed	Conditioned or failed
80	−1.64	−1.00	−2.00	−2.50
70	−1.36	− .75	−1.00	.....
60	− .27	− .15	− .35	− .43
50	+ .53	+ .56	+ .44	+ .64
40	+ .98	+1.16	+ .97	+ .78

DISCUSSION

To explain this paradox, we must assume that the students who entered the course able to observe and record, on the average, made no further effort to improve their technique or even may have become careless. On the other hand, the students who were unable to observe and record their observations made great efforts at improving their technique, because unsatisfactory records were rejected and, therefore, must be repeated. The ambitious students, distinguished or good, profited the most. In drawing in four months' time, we can decidedly modify the performance of the students' work by training.

This makes a strong argument for training as a feature of a science course. If we can train in one valuable asset we can, no doubt, train in other valuable qualities. Training, therefore, is justified in a laboratory course.[3]

HAROLD S. COLTON

FLAGSTAFF, ARIZONA

[2] It must be stressed that the improvement or lack of improvement in this work is a relative matter and absolute improvement can not be accurately determined. However, it can be approximated by assuming that the good students did not do worse and calling the good or distinguished with a preliminary drawing score of 80, zero, in table two. This will add one point to every value. There will then show a marked improvement all the way down the line, with the exception of the higher scores in the first test.

[3] The writer wishes to thank Mr. Paul R. Orr and other members of the Zoology One Staff for their aid in the experiment.

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